SEQUENCE LISTING

<110> RATAIN, MARK J.
INNOCENTI, FEDERICO
DI RIENZO, ANNA
GRIMSLEY, CARRIE

<120> OPTIMIZATION OF CANCER TREATMENT WITH IRINOTECAN

<130> ARCD:389US1

<140> UNKNOWN
<141> 2004-01-05

<150> 60/437,928
<151> 2003-01-03

<150> 60/446,942
<151> 2003-02-12

<150> 60/474,826
<151> 2003-05-30

<160> 13

<170> PatentIn Ver. 2.1

<210> 1
<211> 17483
<212> DNA
<213> Homo sapiens

<400> 1
tcaccgcttc ctccctgtcc tcggggtttt tgtcggggtg ccacttgagc gccagcttgc 60
ggtacgcctt cttgataccc tcggacgagg cctaccgggg tactcccagc acctcgtagt 120
agtccactat gctggactgc caaagagcct gcggggcact ggcacagcga gcggcaaggc 180
tgccagcacc cgcgcacagg tcagaggctt ggcgacctgg gccgcctgga gggccgcccc 240
ttatgacgca gccacatctc attggccgag gcctgtgagc gcctcgcatc ccaagatgca 300
gtgctcctgg gactggccct gctctctgtg aggctctgtg aggccctgtg atgctccaag 360
accaggcccc gcccactccg gcctccaacc agccatggtc tccaaaaagg atgggaaaaa 420
gaggttgggg aaaagagagg gccttgactt tggctgcctg aagaactgtt tttcttaaag 480
taggctttat atcagtcttt ttcctcggcc acaggaggga agagggtggt gggagtgagt 540
ttagtctgac cggggctgaa gacatcctgt tgtttaggac tgcggttctc caacgttcca 600
gccccggtgc ccatttgctt ttgttcatct ggattatgcc tatcatatgt actgcattag 660
agattaaaac agaattaaaa agacatattc attgggcaat ttaagaagaa taaacccatg 720
acacactaac aaacctttt atgtaacttt ttttgagaca aaatgtagtg agaagagtgg 780
catcgtttta cagtttttgc atctctctct ttagtacttg gctctataga gaggtggatt 840
ctcatgtcag cttctgcatt ctatctattg tgatattaca catcccccat gtagcttctg 900
gaaaactcca ctgtacactt gtgggagaat gacaatgaga aaatcaagta acattattac 960
ggaaatagtt ttgactttgt aaaattctcc tgaaaaatta ctggggatcc ctaggatttc 1020
ctggctcata ctttgagaat cgctagtcta gcagagtagt ccctggtatt ctgaagggat 1080
tagtttagga caaccctcct tccccatacc aaaatctaga tgctcaagct ccttttataa 1140
aatgacacag tatttgtata taacctaccc atatcctcct ttaaacctct agtcatctct 1200
tgattacttt tacctaataa atgtaaatgc tatgtaaata gttgttttac agtattggtt 1260
ttttatttgt attatttgta ctgtttttt ttcattgttg ttccccccaa atattttcaa 1320
tctgctgttg gctgaatctg cagatgtgaa gcccaagtat atggagggtc aaatgtgcat 1380
gttattcact tttcttgact gctaaaacaa ccagggagat cctctcagac aaaaggaaat 1440

acagcactat ttactgtatc gaaaccatta agacttgcag gccgtgtgta tagcactggg 1500
gataaacatg ggatgcagtg attatttccg ctagaactgc tatataatga cgatgaattt 1560
tgggggact ttttttgaga tctgagttct cttcacctcc tccttattct ctttttgaca 1620
ctggattctt tgctttgata aattgtgggg caatacacta gtaaaggtca ctcaattcca 1680
aggggaaaat gattaaccaa agaacattct aacggttcat aaagggtatt aggtgtaatg 1740
aggatgtgtt atctcaccag aacaaacttc tgagtttata taacctctag ttacataacc 1800
tgaaacccgg acttggcact tggtaagcac gcaatgaaca gtcatagtaa gctggccaag 1860
ggtagagttc agtttgaaca aagcaatttg agaacatcaa aggaagtttg gggaacagca 1920
agggatccag aatggctaga gggtaagagg cagagggagg gggcaagcag aagggctaga 1980
gaggaggaat gagcttggac aggtgggctg gggtctatcc cagagttttg agagcaaggc 2040
agaggactct gaattttctg tgcccaggaa gctgctgacc aaggttccag aagtggtggt 2100
gaggtggggt ttattcaggt gggcagccga tgcaatgatt caaaagggac agctgggggt 2160
tgggggacca gggggggctg gggccctgaa atgggaccat gacagctggg tctgagagac 2220
agtggtagaa acatccagat tcagcactta cttgctggct tggatgcagg gtctagaacg 2280
aaaagagaag aaaagtcact tctatacaga aacatgtcca gagcgcttac tgtctccaaa 2340
accatggact ggcacctgag tgatagcatg attccaaagc caaaatcttg cctgtaagga 2400
atatatatat atatatatat atatatgtat atatgatata gctatagtct aatagcaagg 2460
acagatatgc aaactgctaa aagatacaag gcagaacaga acaaaatgct gtttttctgg 2520
gattttggaa attcaaggaa ttcaagggat tcaaggaagg tggctttgct tcccgggagg 2580
gtcctgtaga tgatctacag ggcactggac atgtttatgt tgctccttta gtaataagcc 2640
tgtcattctg atttgatgaa aggagatgaa aggagctggt agtgtgtctg atggtggcct 2700
actaacttat gtcttcagct taaaaagaaa gtagcttcaa aagggttcca gaaacacttt 2760
ccatggacgt gtcactcttt agcagccccc aaagcaagac catcatattg ctgccctgct 2820
gtgtgatttc tcagccccta gagcaccatc ccctgtaatt gcctggtcat gagtttgtct 2880
ctgtctacct gacccctcct ttcaggcaag gaccatttct aacttgactt tctgggccta 2940
gttcctagca tagtgactgc catccagtag ggctcacacg ttccataaat atttggcaga 3000
tgagggaatt agcaatgggt tctgctttgg tttcagagca gatattaatt ggattgctta 3060
gtagtggttc tctgttgtaa ttcatgagca tgaatgtgga ttgcccacta ttcagattag 3120
taagtatttc ttggtcaagg gcagagctgt ggccacaaac catccaggta cacagcagaa 3180
gcagcctcaa aaagcttgga agctctgcat gatgcaggaa agtcataaaa tcattacagt 3240
ggtgacttat gtgtttatag ccccttttact gtctataatc tgcaaatgaa ctcacacagc 3300
attgggactt tggaagaatt atcaccctta aggtttaaat taaactgtga atttcagaat 3360
ttctaataag gacacaacaa agagtgaaag cattgctatg tctattctgc ttgcccagaa 3420
tcttggtcct aaaaaatgaa gagtgtttgg gtgtggggag gagcttcagt gtgcatgtgc 3480
atgcaaagta cctactctaa ggagaagaat gagagggtac cctaattacc tgttaatatg 3540
tcccatagga caccaaaact ctagttagct gtttctctat gatcctctaa gcacatcccc 3600
aagtatggct ggccagtgat gtgtatggtt caaatgttgg gatctgtgca gttatcttgg 3660
aattgtatag tacagcagta tatccccccc aaaaagagtg taatacttcc aattctggct 3720
gcacaatact tgccccatag tccatggtca ataaatacaa atttgagttg tttttgctca 3780
tctttccctt ttgacttcaa atcagtcatc agaatttccc caaatgcctt tcccctggat 3840
cttgggccag tggaatgagt acaatttaac ttaattgaat ttgcttatct atttggtttc 3900
ctgttgtgaa caaaagttct ctgaaaagga atttggaaga aagagacttt gttctagtga 3960
acagtttgca aaccagggag ttacagcctc tggtacgcaa tgaaggtgag ttccacagaa 4020
cacaaggcag gcaggtttca cggcaaaaag ttccttccca ggttcccaat caggtccatt 4080
tatgcaaatg aaggatggaa acttgcttag ttcttattgg tcactgcagc tgcattctga 4140
ttggttgatg aagctgagcc ctgagtggct gaggtgggtg agctttaatt ggttggttca 4200
ggtgagcgct gaaaatctca actataaaaa ggtacaggtt ttcaggatac tcagagtaac 4260
cgtgtgacct gtagtaagca aagggccagt tggctctatt ttaaatccag gcccagttag 4320
ccactcaaga tctatcttac aggactggct ctttcaggtt cacactaata aaggcctgtc 4380
cttggggaag acttctgttc acatgcgctc cagtgaattt ccctttctgg tcattctcta 4440
ccccagcacg ccccccaccc ccgacccgcc ccacccaccc acctgttcat ttccttctta 4500
gcatgcttca cgatttctaa gttcctgctc atgtgtttaa attgtgagtc tggctcacct 4560
catggcgcgt gctcgtgtgg tgggctctgc tgcagcctca agaccccaca ctgtgctgga 4620
ctcaataaat attgttggac gaaggaatga aacacatgat acaagtgagc aggcagtacc 4680
gggggagctg tggagtgggc actcttacag gtttccatgg cgaaagcggg ggtacagttg 4740
tgttcttttc tttctaaaag gctttctaaa aagccttctg tttaatttct ggaaaagaag 4800
cctaacttgt tcactacata gtcgtccttc ttcctctctg gtaacacttg ttggtctgtg 4860

gaaatactaa tttaatggat cctgaggttc tggaagtact ttgctgtgtt cactcaagaa 4920
tgtgatttga gtatgaaatt ccagccagtt caactgttgt tgcctattaa gaaacctaat 4980
aaagctccac cttctttatc tctgaaagtg aactccctgc tacctttgtg gactgacagc 5040
tttttatagt cacgtgacac agtcaaacat taacttggtg tatcgattgg tttttgccat 5100
atatatatat ataagtagga gagggcgaac ctctggcagg agcaaaggcg ccatggctgt 5160
ggagtcccag ggcggacgcc cacttgtcct gggcctgctg ctgtgtgtgc tgggcccagt 5220
ggtgtcccat gctgggaaga tactgttgat cccagtggat ggcagccact ggctgagcat 5280
gcttggggcc atccagcagc tgcagcagag gggacatgaa atagttgtcc tagcacctga 5340
cgcctcgttg tacatcagag acggagcatt ttacaccttg aagacgtacc ctgtgccatt 5400
ccaaagggag gatgtgaaag agtcttttgt tagtctcggg cataatgttt ttgagaatga 5460
ttctttcctg cagcgtgtga tcaaaacata caagaaaata aaaaaggact ctgctatgct 5520
tttgtctggc tgttcccact tactgcacaa caaggagctc atggcctccc tggcagaaag 5580
cagctttgat gtcatgctga cggacccttt ccttccttgc agccccatcg tggcccagta 5640
cctgtctctg cccactgtat tcttcttgca tgcactgcca tgcagcctgg aatttgaggc 5700
tacccagtgc cccaacccat tctcctacgt gcccaggcct ctctcctctc attcagatca 5760
catgaccttc ctgcagcggg tgaagaacat gctcattgcc ttttcacaga actttctgtg 5820
cgacgtggtt tattccccgt atgcaaccct tgcctcagaa ttccttcaga gagaggtgac 5880
tgtccaggac ctattgagct ctgcatctgt ctggctgttt agaagtgact ttgtgaagga 5940
ttaccctagg cccatcatgc ccaatatggt ttttgttggt ggaatcaact gccttcacca 6000
aaatccacta tcccaggtgt gtattggagt gggactttta catgcgtata ttctttcaga 6060
tgtattactt tggatcgatt aactagcccc agatatatgc tgagcaagca ttctgagata 6120
atttaaaatg ccctcttttg ttaatttttg actcctaggt ttgagtctgt ctttggcatc 6180
atcttctgga tgatttcttg gtatctgaga tttcgggaaa gcattccttg gacattttac 6240
tctgtgtgct ccagtggata gtaatcaatt agaaacaaca agctgttaaa tgccataggc 6300
acagaatgct gggtttgggg caccctgcag aaaactcagt tgaagcctgc accttgccct 6360
ggattcagtc aggcaggcaa tgttcaggac tgatgaaatc attctttgat gatgatagat 6420
cctggaaatg aaagttgcct ttgtgaccct ggttaaagct ccagtttcta aatattctga 6480
taagaagcta aatcctgcag tccgttctct tctaatgagt gaatcaccag acagtcaggt 6540
tctgacatga tacagaaagg ttgtaggttt cattctcaag ctattaggtt tatttttccc 6600
ctacagagtt tgaagtatgc aaaaagtagc attcacatcc tcatcgaaat ctcagcagag 6660
gatagaaaag aacaggagag gctccttcag atggagcgtt agggaattac tctttgagga 6720
ggtgacattt cagagagcgt tcattcactt atcctgcaaa gattggctga ggatctactg 6780
gcagcccagg cacttcccag gtgctgcgtc tggctcccat taaggggact gatatcacct 6840
tcggaggtga ccttatttcc actatacctc caatgtgatt tgtattttat ttttttaat 6900
tttctgtgca ttttccttca tagcacatca aatatggcag ccatttcact tagatagttg 6960
ttgattgtcc gcttcacatc atgagccatg tggggacctg tgtgactttg cattaatcac 7020
atccactgta tgcggcgtcc tcaacacctg ccaatgggtc tgcatgtatt tggcgcccca 7080
taaatctcag cacctaaggc acagaatagg cacccaccga atatgtgtta cattaatgaa 7140
tgagaagaaa ggtgccaacc gaggtctagt taatgggtcg agagtaatcc acaatagctc 7200
tttttagttc tttgtactcc agctattaca taccaatatg tatatagaaa catatgtaaa 7260
atttttggt tgctttttct acaaaataga gtaacagtgt attcccactg cccacttacc 7320
gataatgtca tggatatcac tccagtttta aatgctatta ctttttaaac tatgaaatag 7380
tatttcatgg tacttgtgta ccacagtgta ttctgctgga gatctagtct agttccccac 7440
agaggaacat tacaatttgt attccaggag ttttgttgtt gtgacctcaa acacttcctt 7500
taaaaagata agctattttg tagtttaaaa aacatttgtt ctgtttcttt ctcattcatc 7560
ttttcttaag tattttacac ggtttttttt tttggtcact actgtgaatg tgttattttt 7620
ttgcatttct atctctagct gattatctac tcattactca gctatctcat caaaatattg 7680
attttcataa taaaaaataa taggcagtca tttgctgata aagaaatttt ggtttcttct 7740
cttataaatt ccatgccaaa tatcagggct attgaattta ttagaatctc taaaaacagt 7800
tgaataattc tggcaatagg aaagatgccc gtcttgctgc tattttagtg gaaattgatt 7860
atcatttcat tattttgcat tatgttagcc attgttttct gaacaggctt tattgattta 7920
gataatttcc ttctttgcgt gaggatgttt gtaggagagg caccgaactt tatcagctgc 7980
ctttctggca tttattgata taaccataaa agtctaagtg gtgaactgtg ttgactacat 8040
atttgttgtt gccttgtttg gtgcagtcag gcttaggtgt gaaaatatgt ttttaaattg 8100
taccttttag taacctgttt tgtcttgttg catgttttaa tctgaaattc cacttttttgg 8160
atattaatat taccacttct gtattatttt tgtttacatt tccctagcac atctttagta 8220
ctcctttgtc ttcaagcttt cttccttttt aaacaacatg gcactggtat ttttaatcca 8280

gtcaggcagt tgctttaata agtgcatttt gcctatttga atctaacaat taatagattt 8340
gattgtaact ctctcagttt actttatgtt tagttgactt tgccattctc ctttttccgg 8400
atttctactg gttggtcaag ttactgttct tattttctct ttcttccttt gttaactaaa 8460
aatgccactc tgcactacca ttcctcttgt gttgatggtc ctattctcaa tactcttgat 8520
aaaactcctg aactttaaga ataaagataa aacttttatt gcacaaagaa gtccatagag 8580
aaagcacaac ctggcattgg cgtgtctttg gtgtgtctga aggaaaagag atagtggaac 8640
aacattggga gaaaaggaat gaaactcaag aattccaaga tgttcctccc ctgccagggt 8700
aagatagcag tggttcacag acaatcgcaa tgctgggtct gagaaaaata actaaacaga 8760
agattagtga ggaccaaggc ttcgagatgg ccaggagagg aaagcttggg agcagggaag 8820
gttgagatat atgtgggtta ctgggaatgc gtgatggtga agtcacagat gacccacatg 8880
gtgtctaagt gctaaagaag aattctggga aaatgaaatg catttgggaa gggaaaatct 8940
aattaaaagc ctaaactaaa aatacaaaat tcttggtaaa gtttaggagt tatgttaaat 9000
gtctcatttt ggctggtgaa gtctcatcag aacagggaaa ttctctcatt caggggcatc 9060
tcatcttttc tttgaaggga atcaatggtg ggggattgga gtgttatttt cagttaatat 9120
gttgcttcac tctttggtca ttccggtaac tgtgaagtca gggtgaagtt taagggaagc 9180
tttgccaagt aggggatgga cttcaccttt attgagcctc atagtagctg gctcaggtag 9240
gagttggccg tgatgacaac ttctctgcag tttgccctgc gtgaatctcc agatgaactt 9300
ttgtgccatt taaactttcg tgatctcctg ctatttaact tcgaatgttt atggacctgt 9360
gggttcaatt ttgtgtgaat cacatcctgc tgattgctga gtgggcgtgt gggagggtgt 9420
gcctggagga gaacttagac tcggcctttt ccagatgagc ttcagtgtaa gagtgggttt 9480
catgaagagc aaaggtccta ggaaatttaa gtaagccatt taccaacgct cagaagaaag 9540
aacttgaaga gcacttggaa atgagctgtg tctccccaag aaagagggag agaaagaggg 9600
gagagatgtg gtgcagaccc tagggaggaa ggagttcaga aaaaccatcc tcagggtgtt 9660
cttgctacaa accaaaaaat gcagcatggt ggtggggagg atgactctgt cctccctgac 9720
ttttagatga gcccaaggga aaaggcaaag acaaagccct taagagccag aggactcacg 9780
agggcctggg gctggtgaga gtggcgggga gagagggctc accttgggag aaggatggtc 9840
agtgtctggg gctttcctgg tcatgttcca aaataggctt ggcaggagtt ctgctgggaa 9900
aatggggttg gttgaccctg caaaaggtct cctgtgtctc acatttaggg tgaccagcat 9960
cctggcttcc tcaggactgt tcaggtttta gcactgaaca tcacatgtcc tagggaaccc 10020
ctcagtttgg gcaagccctg ccacatcaca caatcatatt agtgccctca gtattctttg 10080
caaacataaa accatagact cagtaatccc attactgggt atatacccca aagaaatata 10140
aattattcta ctataagaca catgcacata tttgtttatt gcagcactat tcacaataac 10200
aaagtcatgg aaccaaccca gatgcccatc aatggtagat tggataaaga aaatgtggta 10260
catatacacc atggaatact atgcagccat aacaaggaat gagatcatat tctttgcaag 10320
gacatggatg aagctggaag ccatcatcct ccacaaacta acacaggaac agaaaatcaa 10380
acaccgcatg ttctcactca taagtgggag ttgaacagtg agaatgcgta gacgcaggga 10440
ggggaacaac acacaccagg gcttgtggcg gggtgagggg tgaggggagg aacttagagg 10500
ataggtcaat aggtgcagca aaccaccatg gcatatgtat cccagaactt caagtaaata 10560
ataataataa taattaataa taataataat aataaataaa cccataaagc catttgagag 10620
attcttgggg gattcattgg accactgaaa atctacagtg agaaaagaat tgccatgttg 10680
atgaaacagg aaaactttcc ttgtcccccc cacagagcat gtgacagcgg gaggggctca 10740
ctttctcagt gcgccactgc tcaaacctct aggggagcat acagacgggc aggttgtggg 10800
gctctgacct caccggcagt gtttagaggt ggatgtttac aggctctgaa gcttccaggg 10860
gcgggggtta tggcctttct ttaagttttg ccctctatag tcagcttgtg ttaaccagct 10920
caattacacc ctctaccttg tcgcaaggac agagggcttt ctgtatcctg ggggcttgcc 10980
ttggtgtacc agaagaatcg aatcccacct gggcttggag aatgagtgca aggatttatt 11040
gagtggatgt agctctcagc agatggggga agccagaagg ggatggaatg ggaagggttt 11100
cccctggagt cagaccgctc agtggcccgg gctcggtggc ccgggctcgg tggcctgggc 11160
tctcctccga ctgcctcagc caaactccgc gttgttctgc tggtcagtgg cctgccggtg 11220
cctgttggtg agttcttctc aatgtccagc tgtccttgcg tccctccgct gatgtgctcc 11280
tcccgatgtc cagctacctg tgtgtctgcc tgctagggtc ttggggtttt tataggcaca 11340
tgatgggggc gtggcaggcc agggtggttt tgggaaatga aacatttagg caggaaaaca 11400
aaaatgcctg tcctcaccta ggtccatggg cacaggtctg ggggtggagc cctcgccagg 11460
gaccacaccc tcttctaccc agcacttccc ttccctactt ccatatcatt taaagggacc 11520
acgcccttcc cagctcttcc cttctgtatc actgatgcct tgctctgtgt tctctaagtg 11580
gaattatcac tgtgtgtatg tacaggtgtg tgcatgtgtg tgcatgtacc tgtgcttttc 11640
ttttggaaaa ctagcacatt acctggattt tgcatctcaa ggataattct gtaagcagga 11700

```
acccttcctc ctttagaagg aagtaaagga gaggaaaatg ctgtaaaact tacatattaa 11760
taatttttta ctctatctca aacacgcatg cctttaatca tagtcttaag aggaagatat 11820
ctaattcata acttactgta tgtagtcatc aaagaatatg agaaaaaatt aactgaaaat 11880
ttttcttctg gctctaggaa tttgaagcct acattaatgc ttctggagaa catggaattg 11940
tggttttctc tttgggatca atggtctcag aaattccaga gaagaaagct atggcaattg 12000
ctgatgcttt gggcaaaatc cctcagacag taagaagatt ctataccatg gcctcatatc 12060
tattttcaca ggagcgctaa tcccagactt ccagcttcca gattaattct cttaattgga 12120
accttagatt tggcttttcc ctgccacttc ccaactatta atccaaaggt ttttttgtt 12180
gttgtggttg ttgtcattgt tttcaatttg actctcaaat actctattaa actatgatcc 12240
accacactca gaagtatcat tttctctaag agactcaaaa gtgtattagg gagaatttat 12300
ttaaaaataa aataaatggg atattgtttc ttcatattaa atagaagtat ttctccaaaa 12360
agctgttggt tagaacactg aatttatgtc ttacatttct gctcttatag ttctgcatcc 12420
acttgtttca ttaagcaaac tttcccttaa agtgcaggaa agtgaaaaaa tcctaagtgc 12480
acagcttgat aaattatcac aaattcacgt agtgcataca cccttgtaac taaacctcca 12540
aaacaagatg ccggaagttg ccagtcctca gaagccttca cagttactga tcctcccact 12600
ctgttaaaga ctgttccttc agaggacccc tgttttctag ttagtatagc agatttgttt 12660
tctaatcata ttatgttctt tctttacgtt ctgctctttt tgcccctccc aggtcctgtg 12720
gcggtacact ggaacccgac catcgaatct tgcgaacaac acgatacttg ttaagtggct 12780
accccaaaac gatctgcttg gtatgttggg cggattggat gtataggtca aaccagggtc 12840
aaattaagaa aatggcttaa gcacagctat tctaaaggat tgttgagctt gaaaatatta 12900
tggccaacat atcctacatt gctttttatc tagtggggta tctcaaccca cattttcttc 12960
tgcaaatttc tgcaagggca tgtgagtaac actgagtctt tggagtgttt tcagaaccta 13020
gatgtgtcca gctgtgaaac tcagagatgt aactgctgac atcctcccta ttttgcatct 13080
caggtcaccc gatgacccgt gcctttatca cccatgctgg ttcccatggt gtttatgaaa 13140
gcatatgcaa tggcgttccc atggtgatga tgcccttgtt tggtgatcag atggacaatg 13200
caaagcgcat ggagactaag ggagctggag tgaccctgaa tgttctggaa atgacttctg 13260
aagatttaga aaatgctcta aaagcagtca tcaatgacaa aaggtaagaa agaagataca 13320
gaagaatact ttggtcatgg cattcatgat aaaattgttt caaatatgaa aacatttacg 13380
tagcatttaa tagcgttgtt tcaaatataa aaacaaatac ataaaaatct ggatttttat 13440
ttcttccttt ttttttttt ttttttttga gatggagtct tgctctgtca cctaggctgg 13500
agtgcagtgg tgcaatcttg gcttactgca acctccacct cccacgttca agcagttctg 13560
cctcagcctc cgtgtagctg ggattacagg tgtccaccac cacgcccggt taatttttgt 13620
atttttagt agagaaaggg tttcaccatg tttgtcaggc tggtcttgaa ctcctgactt 13680
caggtgatcc acctgcctcg gcctgccaaa gtgctgagat tacaggcatg agccagcgcg 13740
tctgacctgg atttataaat aagataattt agaggttatt attcacttta taaaaggatt 13800
ctttagtttc tatataattt atcatataat ttatttagaa ttttatttcc cccattagat 13860
ttaaaactcc aatttacata aaaagttgcc ataatagaca tctgatccat aagtttcctg 13920
cacagaaaga aatactccat tataagaagc atagtatctt taagagaaaa acaactcaaa 13980
tgcttagaag tacagctttt tgcagcactg gaacctgtga gaaattttgt ccatggagtt 14040
tatgaatgaa ggagctataa gatatcacag acaaagtctt agaataagag caaaggaaaa 14100
tttgctcaaa tgtggccctg aaaacgattc aaagggcaaa tgatttctgg attaaagtta 14160
gtatattact gtcaagctca ctggtaatag gcttattaga accttatggg aagaagtggt 14220
ggccagtggt agatttcatc cgacaataga tactgtgtgc atatgtgcgt gtgcgtttgt 14280
gcatgtggct gtgctcatgt gtgggtgcac acgtgtgcat tcatatgcgt gtgtgtgtgt 14340
gtgcgtgtgt ttatgagagt gtccattgct ttctcccatg gttacctcct ttagaaagaa 14400
gcagcagtca ggaagacaga tgtgaagagc tggagcatgt tcagatgaga ggagacggaa 14460
cacggggaca caccagcttg agcaagggac aacaggggag gactgatgac tgacttccca 14520
cctttgaggt gctaatgtgt gtgtggtggc actggataaa agatcaatgt tggctaggca 14580
ccatggcaca cgcctgtagt cccagccact ctggaggcta aggcgggagg attgcttgag 14640
cccagaagtt ggaggctgct atgagccgtg atcatgccac tgcactccag caacctgggc 14700
aacagagtga gaccctgtct caaaaaaaaa aaaaaaaatg aaaagtccac ataacctgag 14760
catcatgtgc ccagagcgtt gggtggtgtg gtcccattcc ttccttccag cggcttcttc 14820
tggccacctc aatgtcagga tgtcctgctc acatatcaat accattaaaa cctgacttct 14880
ttccctgcac tgttgaagct ccttcttgag gctcacatta tggatataat tttgattctt 14940
tcttcagtgg tatagataac tacttgtaac ctaagaacaa cttggtgaaa gtcctctaat 15000
acattatttt ttaaaaaaac acaaatcaat gagctcaact tattaactaa ctttcatcta 15060
ttcatttttg agccatccct gtctgattgt gaatctccat gattccaaca ctctgagctg 15120
```

gggatagtgc ctacacaaaa taaaaagaag tggaaaattt tcaaacatca gtttatgctg 15180
acaaccaggc cataataggt gctcaattac tattgaatga atgaatgaaa gttctggcca 15240
ggtacggtgg ctcatgcctg tagtcccaac actttgggag gccgaggcag gtggatcact 15300
tgaggttagg agttcgaaac caacctgacc aacatgaaga aaccttatct ctaccaaaaa 15360
aatataaaaa aattacccag gcatggtggt gtatgcctgt aatcccagct atttgggagg 15420
ctgaggcagg aaaatcactt gaacctgaga ggcggaggtt gcagtgagct gagattgtgc 15480
cactccactc cagcctgggc gacagagtga gactccgtct tacttaaaaa aaaaaaaaag 15540
aaggttccaa gaaaattcat cttaaggttt atgtaaaagg aagatgatat ttaacatgat 15600
tcatggccaa gtactaatat tacattataa taatgtttcc aaataacatt atagatatgt 15660
ttaaagacag tgtattaggc tgttcttgca ttgctgtaaa gaaataccca agactgggta 15720
atttataaag aaaagaggtt tcattggctc gtgtttctgc aggctgtaca ggaagcttag 15780
tgctgacatc acttggctgc cgggggaacc tcagggagct tttactcatg gcagaaggca 15840
atgcgggagc ttgcatgtca catggcaaaa gcaggagcga gagagagttg gggggggaagg 15900
tgccacacac tttttaatga ccggctctca caataactca tgaaaactca ctatcaggaa 15960
gacagcacta aagcacaagg gatccgaccc catgatccaa acacctccca ccaggcccca 16020
tctccagcac tggggattac aattcaacat gagatctgag tgtggacaaa tatccaaact 16080
gtatcagtca acagcgatca taattagtcc tgaataggag tgccttttt tttctttctt 16140
ctccctttc ttttctactt cctcctcctt ttccctctcc tcttcaatct cctcttcatt 16200
cctgtagcac caagggttga agcacctaac ccgttttgga ttgagatgtt ctgattgggc 16260
aatgaacact gtccagaata aacagaaatc cattttgcac taagtggctg cacagaccct 16320
gcctcatgct aaatctagca cccagatagt ttaatgtttc aatgactgaa ttacaaatat 16380
atcatcacct tggatttggc acttacaaat ggctgttaat ttggccagag gtggttgttt 16440
acaacttcaa ataggagact attcataatt tctgacgtga cattttcctt tctttatttt 16500
actgtatgaa aatataatga aatttctcac aaaatatcac taaaaagaaa agaagaagag 16560
taggaagcaa ggttaaaata tttctaaaat ataattttgg tctttctttt tctcccttcc 16620
ttcctccgtc cctctctcct ttcctctctc cctccctccc tccctccctt cctcctttcc 16680
ttgcttcctt ccctccttct cttccttctt tttcaagaga tcaataacat ttattaagaa 16740
taagtttctt aattataacc tttcaggtga taatagtaac acagcctggg caacacaata 16800
agaccttgtt tctacaaaaa atttaaaaat tggccagaca tagtggtgca tgactaattc 16860
cagctactct ggaggctgag gcaggaggat ggcttgagcc caggagttgg aggctgcagt 16920
tagccatgct tgtgccacta cactccagcc cgggcaacag ggcaagactc tgtatctaaa 16980
aacaacaaca acaacaataa tagaaacagg tttcctttcc caagtttgga aaatctggta 17040
gtcttcttaa gcagccatga gcataaagag aggattgttc ataccacagg tgttccaggc 17100
ataacgaaac tgtctttgtg tttagttaca aggagaacat catgcgcctc tccagccttc 17160
acaaggaccg cccggtggag ccgctggacc tggccgtgtt ctgggtggag tttgtgatga 17220
ggcacaaggg cgcgccacac ctgcgccccg cagcccacga cctcacctgg taccagtacc 17280
attccttgga cgtgattggt ttcctcttgg ccgtcgtgct gacagtggcc ttcatcacct 17340
ttaaatgttg tgcttatggc taccggaaat gcttggggaa aaaagggcga gttaagaaag 17400
cccacaaatc caagacccat tgagaagtgg gtgggaaata aggtaaaatt ttgaaccatt 17460
ccctagtcat ttccaaactt gaa 17483

<210> 2
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 2
gtcacgtgac acagtcaaac 20

<210> 3
<211> 19

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 3
tttgctcctg ccagaggtt 19

<210> 4
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 4
ctggggataa acatgggatg 20

<210> 5
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 5
caccaccact tctggaacct 20

<210> 6
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
Primer

<400> 6
acctctagtt acataacctg aa 22

<210> 7
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

Primer

<400> 7
aataaacccg acctcaccac 20

<210> 8
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Primer

<400> 8
gccaagggta gagttcagt 19

<210> 9
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Primer

<400> 9
gaccccagcc cacctgtc 18

<210> 10
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Primer

<400> 10
atgctgggaa gatactgttg 20

<210> 11
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Primer

<400> 11
tttggtgaag gcagttgatt 20

<210> 12
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Primer

<400> 12
gtcttcaagg tgtaaaatgc tc 22

<210> 13
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic Primer

<400> 13
gtgcgacgtg gtttattccc 20